

9.1.3 Exit Slip (CPM IM 3).docx

Monday, March 24, 2025 11:18 AM



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Concept for the lesson: Use measurements of the height of right triangles to create a unit circle and identify reference angles for given angles

Standard MOST aligned to Exit Ticket written out: F-TF.2 Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.

Questions

1) For each of the angles listed, mark and label the height on the unit circle to the right. (Be sure to include the sign of the height)

- a) 150° 1/2
- b) 180° 0
- c) 240° -√3/2 = -0.86
- d) 315° -0.71

sin 30 = opp/hyp  
sin 30 = opp  
1/2 = opp

2) Identify the reference angle for each of the angles listed. Then, mark and label the height of the reference angles on the unit circle to the right.

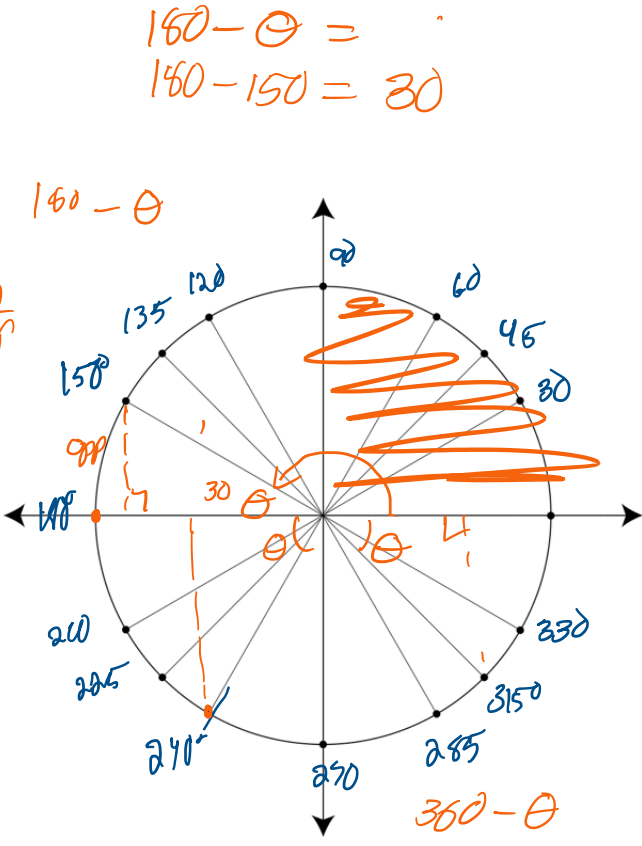
- a) 150° Reference angle: 30
- b) 180° Reference angle: 0
- c) 240° Reference angle: 60
- d) 315° Reference angle: 45

3) What possible angles can a reference angle have? That is, what is the minimum value and what is the maximum value that a reference angle can be?

- a) Minimum value of a reference angle: 0°
- b) Maximum value of a reference angle: 90°

4) Explain what is meant by a reference angle.

angle w/ same absolute value as compared angle



9.1.3 Exit Slip SOLUTIONS

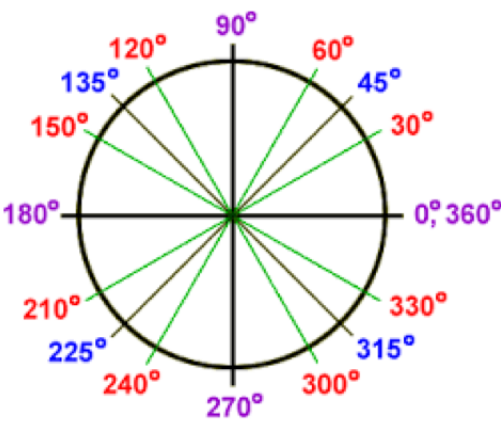
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Questions with Answers in Red (when possible)

1) For each of the angles listed, mark and label the height on the unit circle to the right. (Be sure to include the sign of the height)

- a) 150° Height: 0.50
- b) 180° Height: 0.00
- c) 240° Height: - 0.87
- d) 315° Height: - 0.71



2) Identify the reference angle for each of the angles listed. Then, mark and label the height of the reference angles on the unit circle to the right.

- a) 150° Reference angle: 30°
- b) 180° Reference angle: 0°
- c) 240° Reference angle: 60°
- d) 315° Reference angle: 45°

3) What possible angles can a reference angle have? That is, what is the minimum value and what is the maximum value that a reference angle can be?

- a) Minimum value of a reference angle: The minimum value of a reference angle is 0°.
- b) Maximum value of a reference angle: The maximum value of a reference angle is 90°.

4) Explain what is meant by a reference angle.

Answers may vary: A reference angle is an angle that has the same absolute value height as the given angle (meaning the absolute value of the sine of the angle) is equivalent to the reference angle. All reference angles are between 0° and 90°, including 0° and 90°. [0°, 90°]